AMENDMENTS TO THE CLAIMS

1. **(Currently Amended)** A chemically bonded biomaterial element comprising:

an inorganic cement, exhibiting minimal dimensional changes upon hardening and long-time use, improved mechanical properties and improved translucency;

and added inert filler particles, wherein

the biomaterial element has a micro-structure to meet an algorithm, which is defined by a formula:

$$\lambda = \frac{d * (1 - V_F)}{(V_F)}$$

where λ is the distance between filler particles of mean size d, and V_F is the volume content of non-reacted cement and the added inert filler particles, and where $\lambda \leq 10$ μm, and

wherein the added inert filler particles have a particle size below 5 μm, and

wherein the added inert filler particles consist of glass particles, apatites, brucite and/or bohmite.

2. (Previously Presented) The biomaterial element according to claim 1, wherein $\lambda \leq 8$ μm.

3. (Previously Presented) The biomaterial element according to claim 1, wherein V_F is less than 50 %.

4. (Previously Presented) The biomaterial element according to claim 1, wherein it exerts a pressure or tensile force of < 5 MPa on a surrounding volume.

5. (Previously Presented) The biomaterial element according to claim 1, wherein

the inorganic cement comprises Ca-aluminate, Casilicate and or Ca-phosphate, or a mixture thereof.

6. (Previously Presented) A biomaterial element according to claim 1, wherein
the inorganic cement comprises CaO-Al_2O_3 system, and
a particle size of formed hydrates of these phases is below 3 μm.

7. (Previously Presented) The biomaterial element according to claim 1, wherein the biomaterial element further comprises an organic phase of polyacrylates and/or polycarbonates at a volume content of less than 5 %.

8-9. (Cancelled)

10. (Previously Presented) The biomaterial element according to claim 1, wherein it comprises in-situ formed apatite that separates the formed hydrates of the main system.

11. (Previously Presented) The biomaterial element according to claim 1, wherein a total porosity is below 10 %, where at least 90% of the pores are minipores having a diameter below 0.5 μm.

12. (**Currently Amended**) The biomaterial element according to claim 1, wherein it is a dental material[[,]].

13. (Previously Presented) The biomaterial element according to claim 1, wherein the biomaterial element contains an orthopaedic material or a bone cement.

14. (Previously Presented) The biomaterial element according to claim 1, wherein it is a component, or is in granule form, or in a carrier material for drug delivery.

15. (Cancelled)

16. (Previously Presented) The biomaterial element according to claim 1, wherein $\lambda \leq 4$ μm.

17. (Previously Presented) The biomaterial element according to claim 1, wherein $\lambda \leq 2$ μm.

18. (Previously Presented) The biomaterial element according to claim 1, wherein V_F is 5-45 %.

19. (Previously Presented) The biomaterial element according to claim 1, wherein V_F is 15-35 %.

20. (Previously Presented) The biomaterial element according to claim 1, wherein it exerts a pressure or tensile force of < 2 MPa on a surrounding volume.

21. (Previously Presented) The biomaterial element according to claim 1, wherein it exerts a pressure or tensile force of < 1 MPa on a surrounding volume.

22. (Previously Presented) The biomaterial element according to claim 6, wherein the CaO-Al_2O_3 system is CaO, $(CaO)_3Al_2O_3$, $(CaO)_{12}(Al_2O_3)_7$, $CaOAl_2O_3$, $(CaO)(Al_2O_3)_2$, $(CaO)(Al_2O_3)_6$ or pure $A1_2O_3$ or a mixture thereof.

23. (Previously Presented) The biomaterial element according to claim 6, wherein a main phase of the CaO-Al_2O_3 system is $CaOA1_2O_3$ or $(CaO)(Al_2O_3)_2$.

24. (Previously Presented) The biomaterial element according to claim 6, wherein a main phase of the $CaO\text{-}Al_2O_3$ system is $CaOA1_2O_3$.

25. (Previously Presented) The biomaterial element according to claim 6, wherein a particle size of formed hydrates of these phases is below 1 μm.

26. (Previously Presented) The biomaterial element according to claim 6, wherein a particle size of formed hydrates of these phases is below 0.5 μm.

27. (Previously Presented) The biomaterial element according to claim 1, wherein added inert filler particles have a particle size below 2 μm.

28. (Previously Presented) The biomaterial element according to claim 1, wherein a total porosity is below 5 %, distributed on minipores having a diameter below 0.1 μm, to an extent of at least 90 % of the total porosity.

29. (Previously Presented) A biomaterial element according to claim 12, wherein the dental material is a dental filling material or a root filling material.